

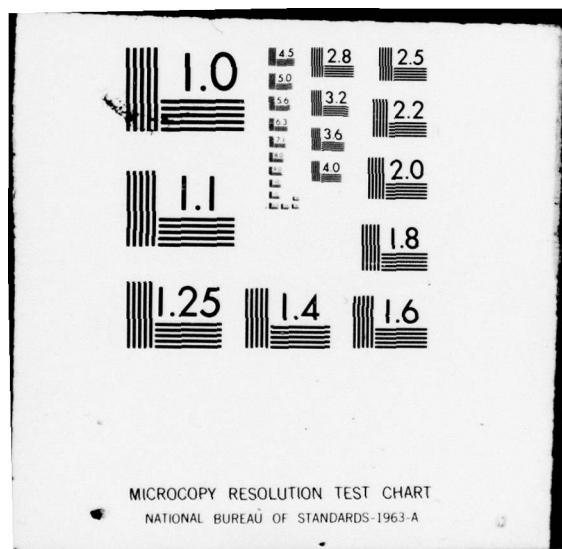
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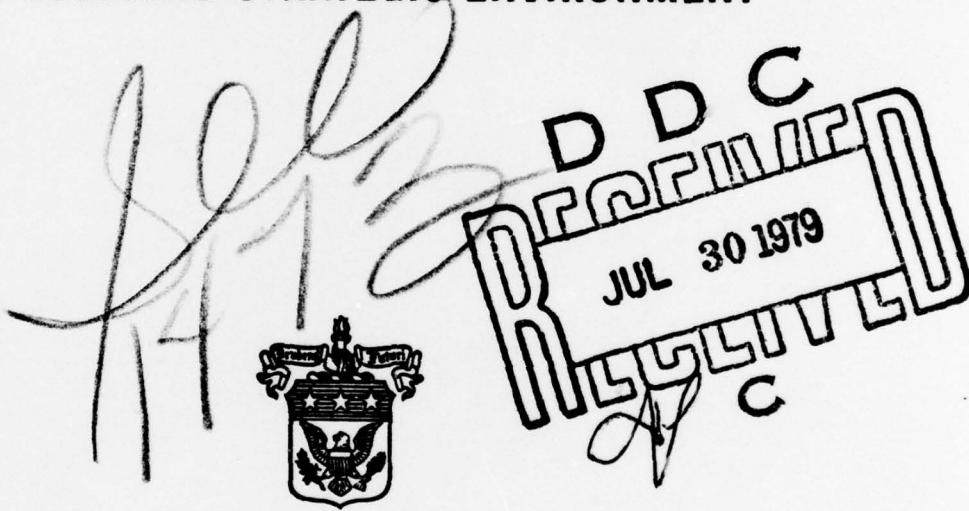
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15 MAY 1979

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THE EVOLVING STRATEGIC ENVIRONMENT

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THE EVOLVING STRATEGIC ENVIRONMENT

by

Robert Kennedy

and

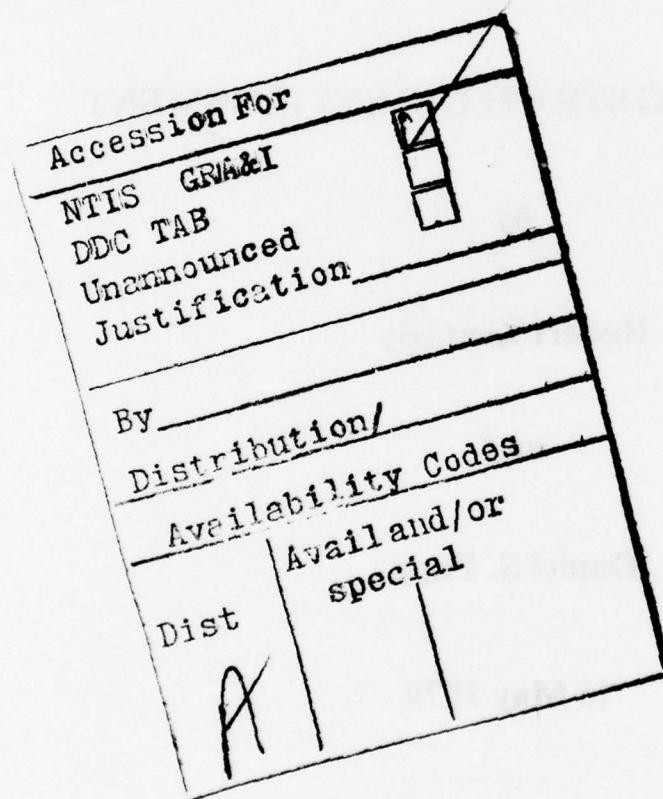
Daniel S. Papp

15 May 1979

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FOREWORD

This memorandum examines six prominent trends which appear likely to have a profound impact on the structure and functioning of the international system and on the ability of the United States to exercise influence in the world arena. These trends are 1) the growing scarcity of resources; 2) the continuing world population increase; 3) the widening economic gap between industrialized and certain nonindustrialized nations; 4) the proliferation of technological capabilities, and the acceleration of technological changes; 5) the expansion of military capabilities; and, 6) the declining utility of great power strategic weaponry. The authors suggest that the impacts of these trends indicate we are entering an age when almost any state can play power politics. They conclude that within this context policy alternatives must be sought which protect the interests and values of the United States and its allies.

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This memorandum was prepared as a contribution to the field of national security research and study. As such, it does not reflect the official view of the College, the Department of the Army, or the Department of Defense.

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BIOGRAPHICAL SKETCHES OF THE AUTHORS

DR. ROBERT KENNEDY joined the Strategic Studies Institute in 1974. A graduate of the US Air Force Academy, Dr. Kennedy completed his graduate work in political science at Georgetown University. Dr. Kennedy served on active duty briefly with the Army and then with the Air Force from 1958 to 1971 and is currently a reserve officer with the Air National Guard. Prior to his present position, he was foreign affairs officer, US Arms Control and Disarmament Agency.

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THE EVOLVING STRATEGIC ENVIRONMENT

International politics can be described as the series of interactions through which states seek objectives in a multistate milieu. That process involves a multitude of social, economic, political, and military factors which affect interstate relations across a wide spectrum of interchange. The dynamic nature of such factors and the host of interactions involved, however, render improbable a comprehensive understanding of the international environment. Hence, students of international politics often scan the macro-political horizons in an effort to discern major trends and patterns of interactions which not only will affect the attitudes of policymakers as the policymakers select specific courses of action, but also serve to define the limits of available policy options.

As a minimum, such efforts are intended to provide an outline of the future to national leaders as they forge policies designed to influence the course of events in the international arena. These efforts usually involve an ecological approach to predicting or forecasting based on factors which are generally considered to be outside the immediate control of any single national entity. The

nation-state thus becomes the "environed unit," while the trends and patterns of interaction are considered an important part of the international milieu with which national leaders must deal as they pursue their nation's interests.

This essay will examine the more prominent current trends and patterns of interstate interactions and assess their potential impact on the future evolution of the international environment. It should be recognized, however, that such an effort faces several significant limitations.

First, even the trained observer sees imperfectly. His vision is often obscured by value biases not only in the selection of data which serve to define specific trends, but also in the analysis of that data. As a result, in some instances trends which appear manifestly demonstrable to the observer may only be imperfect products of the observer's psychological or perceptual environment, reflecting only dimly the "real" or operational environment. In extreme cases, observer value biases may even result in a failure to identify important trends.

Second, even if major current trends are clearly perceived, the interrelationship among the various trends may not be well understood. For example, in an age of technological acceleration, a growing scarcity of resources may portend a widened gap between have and have-not nations as the rich nations are able to employ their wealth in search of technologies capable of offsetting the effects of scarcity. On the other hand, resource scarcity may combine with the proliferation of military capabilities to enable poor but resource abundant nations to increase prices of resources in high demand without fear of resource appropriation through the armed intervention of other states.

A third difficulty arises from the potential development of autonomous trends or new discoveries which may alter already existing trends and their interrelationships. The development of nuclear weapons serves as one past example of such a discovery. In the near future, a breakthrough in solar or nuclear fusion power technology may, likewise, have a significant impact on extant trends and their interrelationships.

Finally, the mere illumination of a trend may act as an intervening variable which alters the trend itself and its subsequent impact. This "Heisenberg principle" is unavoidable in forecasting, and is further compounded by the frequent inability of an observer to foresee the impact his forecasts are likely to have on the future.

Despite such difficulties, however, it is necessary to move at least tentatively toward an examination of trends likely to have a significant impact on the ability of the United States to achieve its foreign policy objectives in the coming decades. At the present time, six prominent trends appear likely to have a profound impact on the structure and functioning of the international system and on the ability of the United States to exercise influence in the world arena. These are (1) the growing scarcity of resources, (2) the continued increase in world population, (3) the widening economic gap between industrialized and certain nonindustrialized nations, (4) the proliferation of technological capabilities and the acceleration of technological change, (5) the expansion of military capabilities, and (6) the declining utility of great power strategic weaponry.

THE GROWING SCARCITY OF RESOURCES

For most of the industrialized world, the availability of nonrenewable resources has become a matter of major concern. West Germany, typical of a pattern which is becoming increasingly more evident among industrialized countries, is reported to be 100 percent dependent on imports to meet its requirements for copper, tin, aluminum, titanium, nickel, and several other raw materials.¹ Likewise, the United States has grown, and will continue to grow, more dependent on nonrenewable resources (see Table 1).

With the significant exception of petroleum, however, resource scarcity is likely to be less a function of an impending absolute depletion of minerals, than of efforts by resource-abundant nations to maximize the political and economic utility of their indigenous natural resources in an era of unprecedented demand. While a significant percentage of presently identified world resource reserves will remain available into the next century (see Table 2), a sizable portion of those reserves are located in relatively few countries (see Table 3).

Conscious national policies by resource-rich nations to curtail production or to form multinational cartels to effect price increases are likely to have an adverse effect on the economies of a number of countries. On occasion, deteriorating economic conditions brought about by these policies may lead to political or social destabilization within some resource-importing countries.

Table 1
PAST AND PROJECTED US RESOURCE DEPENDENCY

Resource	1950	Percent Imported by Year		
		1970	1985	2000
Aluminum	64	85	96	98
Chromium	na	100	100	100
Copper	31	0	34	56
Iron	8	30	55	67
Lead	39	31	62	67
Manganese	88	95	100	100
Nickel	94	90	88	89
Tin	77	na	100	100
Tungsten	na	50	87	97
Zinc	38	59	72	84

Reprinted with permission from Lester R. Brown's, The Global Politics of Resource Scarcity, Development Paper 17 (Washington, DC: Overseas Development Council, 1974), p. 21. Brown's data is derived from US Department of Interior publications.

Table 2

DEMAND AND RESERVE TOTALS FOR SELECTED
MINERAL RESOURCES 1974-2000, US AND WORLD

Resource	Unit	Total Primary Mineral Demand 1974 - 2000		Identified Resource Reserve		Percent of World Resource Reserve Remaining by 2000
		US	World	US	World	
Aluminum	Million ST	316	969	50	6310	85
Chromium	Million ST	21	101	2	1157	91
Copper	Million ST	78	353	410	2050	83
Iron Ore	Billion ST	3	22	18	215	90
Lead	Million ST	31	136	119	330	59
Manganese	Million ST	46	408	74	3600	89
Nickel	Million ST	7	29	15	123	76
Tin	Thousand LT	1400	7500	85	20385	63
Tungsten	Million LB	780	3270	958	11358	71
Zinc	Million ST	57	239	130	1660	86

Source: US Bureau of Mines, Mineral Facts and Problems (Washington, DC: US Government Printing Office, 1976), p. 33

Table 3
KEY RESOURCE RESERVES BY SOURCE

Resource	Unit	Major Sites of Reserves (Reserves Held)	% of World Reserves Held by Listed Countries
Aluminum	Million ST	Australia (1300), Brazil (1100), Guinea (1100)	55
Chromite Ore (High Chromium)	Million ST	Rhodesia (560)	86
Copper	Million ST	US (410), Sea Nodules (400), Chile (220), Canada (170)	59
Iron Ore	Billion ST	USSR (57), Brazil (29), Canada (29), Australia (20), US (18)	71
Lead	Million ST	US (119), Canada (39), USSR (36), Australia (30)	68
Manganese	Million ST	South Africa (1680), USSR (1350)(figures exclude Sea Nodules)	84
Nickel	Million ST	New Caledonia (27), Cuba (20), Canada (18), US (15)	65
Tin	Thousand ST	Malaysia (5577), Thailand (5500), Indonesia (4330), Brazil (4348), PRC (3440)(figures include iden- tified and undiscovered resources)	63
Tungsten	Million LB	PRC (6100), Canada (1180)	64
Zinc	Million ST	Canada (55), US (50), Australia (36), USSR (24)(figures include only reserves economically recoverable at 1973-74 prices)	61
Oil*	Billion Bbl	Saudi Arabia (110), USSR (78), Kuwait (67), Iran (63), Iraq (34), Abu Dhabi (29), US (31), Libya (25)	73
Gas*	Trillion Ft ³	USSR (918), Iran (330), US (220), Algeria (125), Saudi Arabia (63)	72

Source: US Bureau of Mines, Mineral Facts and Problems (Washington, DC:
US Government Printing Office, 1976), appropriate pages throughout.

*Oil and Gas Journal, December 27, 1976, pp. 104-105.

Nevertheless, the increasing availability of commodity substitutes, technological advances in recovering low-grade mineral deposits, improvements in seabed exploitation, uneven demand, and difficulties in organizing tightly knit international cartels should serve to limit the potential impact of contrived scarcities in all but a few nonenergy resource commodities. The only significant exception may be petroleum. While the threat of contrived scarcity will continue to haunt petroleum-importing nations, it will be joined by the fear of an impending absolute depletion of petroleum reserves. As this occurs, competition among industrial states for access to petroleum resources may strain traditional alliances of both the East and the West. Moreover, great power rivalry for political influence in oil-rich nations is likely to increase as the Soviet Union's energy demands begin to exceed its national productive capacity in the next few decades.²

In the long term, technological advances in solar and fusion power will reduce dependence on petroleum resources with consequent profound and potentially promising effect on the international environment. However, neither solar nor fusion power is likely to become a widespread, economically feasible alternative to petroleum before the turn of the century.³ In the interim, while nuclear fission energy, a renewed emphasis on coal, and national conservation efforts may serve to partially offset the increasing demand for oil, competition for petroleum resources are likely to intensify.

THE CONTINUED INCREASE IN WORLD POPULATION

Although recent trends indicate reduced population growth rates, projections indicate that the world's population will nearly double by 2000. If industrial output, job formation, food production, and other measures of living standards can keep pace with population growth, a doubling of world population in the next two and a half decades need not necessarily be cause for alarm. However, there appears to be little reason for optimism.

In many developing countries, the rate of economic growth barely exceeds the rate of population growth. Annual per capita economic growth in these countries is small. In other countries population growth exceeds economic growth, resulting in declining living standards for large segments of the population (for example

of growth patterns in developing countries, see Table 4). The pressures of urbanization, moreover, compound the impact of population growth. Although the trend toward urbanization has slowed in some areas of the world, the situation remains critical in the developing nations.⁴ As people continue to flock to already overburdened urban infrastructures, governments are finding it increasingly difficult to satisfy demands for employment and to provide basic social services in health, food distribution, and transportation.

Table 4
THE IMPACT OF POPULATION GROWTH AND ECONOMIC GROWTH ON PER CAPITA GNP

	Population Growth Rate (Percent)	Yearly Economic Growth Rate 1970-74 (Percent)	Yearly Per Capita Economic Growth Rate (Percent)
Chile	1.9	2.6	.7
Ghana	2.7	4.8	1.7
India	2.0	1.1	-1.3
Pakistan	2.9	3.4	0.4
Zaire	2.5	4.5	1.8

Source: World Population Growth and Response 1965-1975 (New York: Population Reference Bureau, Inc., 1976)

Perhaps the most pressing population-related problem, however, is the possibility of an increasing shortage of food. Skewed distribution patterns and the potential for a future absolute shortage of food give cause for serious concern.

Current skewed distribution patterns include those associated with the global maldistribution of food stuffs and those brought on by short-term temporary local shortages. The global

Current skewed distribution patterns include those associated with the global maldistribution of food stuffs and those brought on by short-term temporary local shortages. The global maldistribution may, perhaps, best be illustrated by the fact that the average daily caloric food intake ranges from a low of 2100 for Asians to a high of 3250 for Australians.⁵ Local shortages, on the

other hand, may be induced by temporary climatological changes, insect infestations, or social events. For example, World Food Program officials project that 1.5 million Ethiopians may starve during 1978-79 as a result of drought, locusts, and warfare.⁶

Moreover, while in recent years total world food supply has kept pace with and even exceeded the growth in world population, there is some doubt whether it can continue to do so in the future. According to the United Nations, the world population index grew from 102 to 125 from 1964 to 1975, while the world food index expanded from 104 to 135 during the same period.⁷ However, the Food and Agriculture Organization of the United Nations has reported that there has been little progress in eradicating hunger and malnutrition from 1975 through 1978, and that there are some indications that world population growth once again outstripped food production in 1978.⁸ Thus, in future years, food shortages caused by distribution shortcomings may be joined by an absolute shortage of food.

As the pressures of population increase in many of the nonindustrial countries throughout the remainder of the century, the potential for social unrest will increase. Some countries can be expected to distract attention from their internal difficulties by focusing national attention on external threats (a technique not uncommon throughout the postwar period). Others may be subject to a continuing pattern of drastic alterations of their social-political systems as they attempt to accommodate demands brought on by population growth and urbanization. Some countries, forced by considerations which appear to be motivated by a desire to bring the greatest good to the greatest number, may even seek radical solutions which direct national wealth toward only the productive segments of society, permitting the sick, the elderly, the weak, and the unskilled to survive as they may.⁹

At a minimum, frustration over the continued apparent inability or unwillingness of international organizations, supranational agencies, or industrial states to render effective assistance to alleviate conditions brought on by the pressures of population growth and food shortage is likely to add to the antipathy and resentment which some developing nations feel toward the industrialized world and result in a renewed search for national solutions to problems which the international community has been unable to successfully address.

THE WIDENING ECONOMIC GAP BETWEEN INDUSTRIALIZED AND CERTAIN NONINDUSTRIAL NATIONS

Economic growth has been a primary objective of nation-states throughout the postwar era. For the most part, the industrialized states have had promising levels of economic growth throughout the period (see Table 5). Nonindustrial states, however, have had less than uniform success. Indeed, as Table 5 illustrates, in recent years a significant division has been developing between some nonindustrialized states which appear to be stagnating economically and others which are, in fact, experiencing real growth. As a result, it is possible to foresee a bifurcation of the nonindustrialized world, with one group of states—whether because of mineral wealth, geographic position, or other factors—successfully closing the economic gap between itself and the industrialized world, and another group—those countries sometimes called the "Fourth World" in current literature¹⁰—falling increasingly behind both the industrialized states and the more fortunate nonindustrialized states.

Several factors render this "Fourth World" plight almost inevitable. First, population growth is rapid in many of these countries. Thus, as has been previously noted, their economies must expand rapidly simply to maintain current standards of living. Second, industrialization and development may be disruptive as well as productive. Hence, until domestic political, economic, and social infrastructures are created that can absorb modernization efforts, development may in some cases be dysfunctional. Third, inflated energy costs have already eroded what little reserves of hard currency some nations had, and economic growth has correspondingly slowed. Finally, as the industrialized world itself is beset by continued economic difficulties, its concern for the plight of "Fourth World" countries, and its corresponding willingness to provide financial assistance to such states, may diminish.¹¹

While the political implications of the emerging bifurcation of the developing nations will vary depending on a host of local factors, the impact of that bifurcation on the international system will be profound. In the case of the more fortunate states, their new-found economic strength is likely to result in a new international political assertiveness, a phenomenon already

Table 5
INDEX NUMBERS OF PER CAPITA DOMESTIC PRODUCT AT CONSTANT
PRICES FOR SELECTED COUNTRIES (1970 = 100)

		1960	1965	1970	1975
<u>"Industrialized States"</u>	USA	78	91	100	107
	USSR	57	73	100	126
	UK	82	91	100	109
	FRG	69	83	100	107
	France	63	79	100	115
	GDR	65	78	100	132
<u>"Third World"</u>	Brazil	74	80	100	126
	Columbia	80	86	100	118
	Ecuador	--	90	100	135
	Iran	55	68	100	209
	Paraguay	86	93	100	117
	Sri Lanka	--	83	100	113
<u>"Fourth World"</u>	Saudi Arabia	--	74	100	163*
	Chile	80	91	100	86
	Ethiopia	--	92	100	103
	Kenya	--	82	100	104
	India	85	88	100	97*
	Honduras	86	93	100	97*
	Pakistan	83	95	100	100*
	Bangladesh	--	--	100	94
	Uruguay	98	95	100	96

Source: United Nations, 1976 Statistical Yearbook (New York: United Nations, 1977), pp. 639-643. (Copyright).

*1974 Figure.

manifest in the actions of such states as Saudi Arabia, and Brazil, which have already begun to establish themselves as regional powers. In some instances these new centers of economic and political power may align themselves with a superpower. In other instances, emerging regional powers may choose to act independently challenging postwar patterns of political interchange. In either case, these new centers of regional power will be the focus of superpower competition, as both the United States and the Soviet Union seek to preserve or enhance their regional influence.

In contrast, "Fourth World" states are likely to be relegated to the backwaters of the international community. Nevertheless, their problematic economic situation may lead to social conditions which have long been considered an ideal breeding ground for anxiety, frustration, and discontent which, if internalized, could lead to civil disorders and revolution. To the extent that such feelings are externalized, a growing resentment not only of industrial states, but also developing states, coupled with the advanced technological know-how and military hardware which is increasingly available to these "Fourth World states," will augment the potential for transnational conflict with attendant implications for great power involvement.

THE PROLIFERATION OF TECHNOLOGICAL CAPABILITIES AND THE ACCELERATION OF TECHNOLOGICAL CHANGE

Modern advances in communications, transportation, and industrial and military technologies have had a profound impact on the international system. Improvements in communications and transportation have drawn nations more closely together. The spread of industrial technologies has led to increased economic interdependence among industrial and developing countries, while giving impulse to a new sense of political self-identity in former colonial states. At the same time, almost all nations have become more powerful as a result of technological advances in military firepower.

This spread of technology has been accompanied by an acceleration of technological change. The advanced industrialized states with their capability for rapid adjustment to technological

innovation are likely to continue to reap the greatest advantages from this acceleration of technological change. The aggregate cost of technological innovation, however, renders it improbable that any single nation will have sufficient resources to attain across-the-board technological superiority. Hence, the growth of technological—and consequent economic—interdependence appears inevitable.¹²

Among the industrial states, East European countries will continue to seek expertise from the West in selected technologies. The West to East transfer of expertise, however, will be limited both by a Western desire not to lose technological advantage and by an East European unwillingness to provide requisite cooperation for fear of exposing industrial inferiorities and risking "subversive" Western penetration.

The proliferation of advanced technologies is likely to have its most significant impact in the developing world, not only directly on the countries of the "Third World," but also on the interaction between developed and developing countries. In some developing nations, the "appropriate technologies" concept will guide technological advance, however, many developing states, in an effort to enhance their international prestige, will seek not only those technological concepts and techniques relevant to their economic requirements, but also the most advanced capabilities.¹³ As a result, new technologies may be introduced in countries which lack those domestic infrastructures required to absorb them. In such circumstances, traditional socio-economic patterns may well be undermined, giving rise to internal tensions and domestic disorder.

The spread of advanced technological capabilities to developing nations is also likely to have important indirect effects on the industrial world. Politically, as developing states acquire modern advanced technologies, they may come to feel a new sense of independence from the industrialized countries of both West and East. Economically, while for the most part technological proliferation will result in a growing awareness in most developing countries of an increasing world economic interdependence, a number of economic requirements once met through trade with industrial countries may come to be fulfilled domestically by the developing nations themselves or through trade with other developing countries which have acquired advanced technological

capabilities. Militarily, developing nations are likely to create indigenous arms production capabilities.

In sum, it can be expected that the continued proliferation of advanced technologies and the acceleration of technological change will lead to increased economic interdependence among nations of the developing and of the industrialized world, while paradoxically creating a sense of increased political independence among the nations of the developing world in their relations with the great powers and other industrial nations.

THE EXPANSION OF MILITARY CAPABILITIES

From 1956 to 1976, world military expenditures expressed in constant dollars have nearly doubled. The trend toward spiraling military expenditures has been most pronounced in many developing countries. For example, while military expenditures by NATO and the Warsaw Treaty Organization countries have increased by 27 percent and 111 percent respectively, expenditures in Central America and South Asia have tripled. At the same time, there has been a quantum leap in expenditures in Africa and the Middle East (see Table 6). Such increases in military expenditures could serve to heighten international tensions and result in an increasing probability of confrontation and conflict as individual states sense a new ability to redress their grievances against neighbor states through the use or threatened use of military force.

These increasing expenditures, coupled with the persistent spread of technologically advanced weapon systems and the scientific and technological knowledge required to produce such weapons domestically, is likely to result in a continued enhancement of the firepower and lethality of even the most impoverished nations. Great powers may thus find it increasingly costly and risky to intervene militarily in these nations.

The growth of conventional military capabilities will almost inevitably be accompanied by nuclear proliferation. Among the developing nations, India has already joined the nuclear club, and several other countries reputedly have the technological capability to assume membership when and if they desire. Thus, as some observers have suggested, the question may not be whether nuclear proliferation will occur, but rather among what countries, to what extent, and at what pace proliferation will take place.¹⁴ Four factors are likely to contribute to the potential for proliferation.

Table 6
WORLD MILITARY EXPENDITURES: 1956 AND 1976***
(AT CONSTANT PRICES)

Country	1956	1976	1975X
USA	68,234	77,373	90,948
Other NATO	29,245	46,859	58,194
TOTAL NATO	97,479	124,232	149,142
USSR	31,600	61,000	61,000
Other WTO*	2,600	11,007	10,207
TOTAL WTO	34,200	72,107	71,307
Other Europe	2,880	5,900	7,761
Middle East	975	21,835	25,164
South Asia	975	3,210	3,638
Far East (excl China)	2,725	8,700	10,855
China**	<u>19,100</u>	<u>27,300</u>	<u>32,300</u>
Oceania	1,058	2,097	2,597
Africa (excl Egypt)	260	5,200	6,039
Central America	300	950	1,105
South America	2,340	4,500	4,417
WORLD TOTAL	152,292	276,031	314,325

Source: SIPRI Yearbook 1977: World Armaments and Disarmaments
(Stockholm, Sweden: Alongvist and Wiksell International,
1977), pp. 222-223

*At current prices and Benoit-Lubell exchange rates (for an explanation,
SIPRI Yearbook 1977: World Armaments and Disarmaments (Stockholm, Sweden:
Alongvist and Wiksell International, 1977), p. 210, and E. Benoit and H.
Lubell, "The World Burden in National Defense," in E. Benoit, ed., Disarma-
ment World Economic Interdependence (Oslo: Universitetsforlaget, 1967)).

**Only rough estimate of Chinese military expenditures has been made
by SIPRI.

***Figures are in millions of US dollars at constant 1973 prices and
exchange rates (final column X is at current price and exchange rates).

First is the availability of know-how. It has become increasingly apparent that the technical information and expertise required to design and manufacture a nuclear weapon are readily available to numerous countries. Thousands of scientists around the world have a direct knowledge of nuclear weapons designs.

Second, the availability of required materials enables any country that has a nuclear reactor for research purposes or for power generation to produce the basic fissile material required for the production of nuclear weapons. It has been estimated that by 1980 the world will have accumulated about 300,000 kilograms of plutonium—enough for approximately 9,000 to 10,000 low-yield nuclear weapons. Furthermore, it has been estimated that 40 percent of this plutonium will be produced in 25 countries that do not now have nuclear weapons and would permit, theoretically, the production of over 2,000 20 Kt nuclear bombs annually in these countries¹⁵ (see Table 7).

Third is the proliferation of modern conventional weapons systems which could deliver nuclear weapons rapidly and effectively. An unsophisticated atomic bomb with a yield of about 20 Kt would weigh about 1,000 kilograms,¹⁶ and could be delivered by a wide variety of comparatively inexpensive fighter and light bomber aircraft and surface-to-surface missiles systems which are becoming increasingly available throughout the world.

Finally, in a fundamentally anarchic world in which military might remains one of the more prominent manifestations of national power and the force of arms remains the ultimate arbiter of disputes among nations, such disincentives as the possibility of economic sanctions, the moral "stigma" attached to going nuclear, and the increased potential for cataclysmic conflict may pale before the perceived advantages of acquiring nuclear weapons. As a minimum, states may be motivated to acquire such weapons as a means of promoting their national security and enhancing their international prestige and influence.

In short, as a result of the proliferation of conventional and nuclear armaments, the world is likely to be a more dangerous place in the future. Moreover, in such a proliferated world, the superpowers are likely to find it increasingly difficult to employ military forces in the pursuit of policy objectives.

Table 7
WORLD NUCLEAR POWER CAPACITY IN OPERATION
AS OF 31 DECEMBER 1975 and PROJECTED FOR 1980

Country	Total Nuclear Power Capacity 1975 MW _e (Net)	Number of Reactors 1975 (20 MW _e)	Total Nuclear Power Capacity 1980 MW _e (Net)	Number of Reactors 1980* (20 NW _e)	Theoretical Capacity for 20 Kt Atomic Bomb Production 1980 (Bombs/Year)
Argentina	319	1	919	2	25
Austria	--	--	692	1	15
Belgium	1,650	3	3,446	5(1)	85
Brazil	--	--	626	1	15
Bulgaria	864	2	1,728	4	45
Canada	2,539	7	7,802	15	200
Czechoslovakia	110	1	1,838	5(3)	45
Finland	--	--	1,500	3	35
France	2,706	10	14,462	22	--
German DR	926	3	1,768	5	45
Germany, FR	4,060	8	13,320	18	330
Hungary	--	--	864	2	20
India	587	3	1,229	6	30
Iran	--	--	1,200	1	30
Italy	542	3	1,422	5	35
Japan	6,287	12	19,066	28(4)	450
Korea, South	--	--	1,769	3(2)	45
Mexico	--	--	1,308	2	30
Netherlands	499	2	499	2	12
Pakistan	125	1	125	1	3
Romania	--	--	432	1(1)	10
Spain	1,073	3	8,365	11(1)	210
Sweden	3,184	5	8,264	11(1)	210
Switzerland	1,006	3	5,933	8(4)	150
Taiwan	--	--	2,158	3	50
UK	4,539	29	10,697	39	--
USA	36,593	54	86,690	103(5)	--
USSR	5,464	18	19,624	36	--
Yugoslavia	--	--	1,400	2(1)	35
Totals	1975	1980	Total theoretical bomb production capacity in nonnuclear weapon countries 1980		
Countries**	19	29	2000+ bombs/year		
Reactors	168	345			
Capacity (MW_e)	73,073	219,164			

Source: SIPRI Yearbook 1976: World Armaments and Disarmaments (Stockholm, Sweden: Almgvist and Wiksell International, 1976), p. 42.

*The numbers in brackets indicate the number of reactors included in the total figure for reactors planned for operation in 1980 but not under construction as of 31 December 1975.

**The People's Republic of China has constructed one or two power reactors but only to supply electricity for its military uranium-enrichment plant.

DECLINING UTILITY OF GREAT POWER STRATEGIC WEAPONRY

Nuclear weapons have made it possible for either superpower to do immense damage to an adversary in time of conflict. The recognition of the enormous destructive potential of nuclear weapons, however, has all but proscribed their use. While some post-World War II incidents suggest that one superpower successfully relied on the threatened use of its strategic nuclear arsenal to coerce the other to action, the advent of nuclear parity has served to emphasize the view that any actual use of strategic nuclear weapons by one superpower against the other is likely to result in mutual annihilation. Moreover, the idea of a great power using or threatening to use its nuclear munitions to secure some objective from a lesser state is almost universally viewed with moral repugnance. As a result, while the strategic nuclear weapons of the superpowers may serve as useful deterrents to attacks directed at their homelands, such weapons are and will continue to be of little use in compelling or coercing other states to action. As Raymond Aaron has suggested:

Ballistic missiles. . .have less influence on the course of events than the English fleet sitting at anchor may have had during the nineteenth century. . . . They do not permit either of the two great powers to dictate to their allies or clients instructing them on how they must conduct themselves.¹⁷

Furthermore, the possession by the superpowers of large arsenals of strategic nuclear weapons has apparently narrowed the spectrum of the potential utility of their conventional might. Where the conventional armed forces of the superpowers might become involved in a direct military confrontation, the United States and the Soviet Union have practiced policies of conflict avoidance lest the confrontation result in an escalation to the nuclear level. Only in instances where the armed forces of the two nuclear powers are not likely to come into contact have the great powers demonstrated a willingness to employ their conventional forces freely. Such a pattern of great power military interaction is likely to continue. As a result, the breakdown of the old post-World War II bipolar system—a system largely based on the premise that direct conflict between the superpowers was highly probable—is likely to continue.

CONCLUSIONS

In aggregate, the trends now evident indicate that we are entering an era in which almost any state with a modicum of political, economic, or military strength can play power politics. Moreover, many states will be increasingly inclined to do so. Traditional military and economic indicators of national power will be increasingly supplemented by more sophisticated measures of national capability. Moreover, in some cases, states which are clearly superior in military and economic strength, but unwilling or unable to comprehend or adapt to a changing international environment will increasingly find themselves unable to influence the course of events in the international arena, despite their superiority in the more traditional measures of national power.

The growing scarcity of resources, the pressures of population growth, and the widening economic gap between rich and poor are adding a new complexity to interstate relations and are imposing a potentially threatening dimension to the demands placed on governments of both the industrialized and the nonindustrialized world. The rapid pace of technological innovation will continue to enhance the volume and rate of cross-national transactions, and add a measure of political and economic proximity among states. This proximity will offer new opportunities to resolve differences, while at the same time it will generate new pressures which may create or aggravate existing political, economic, and social tensions among nations.

In such a context, while the "delicate balance of terror" has reduced the ability of the superpowers to use their nuclear might to influence the actions of others, advances in military technology and technical know-how will continue to magnify the potential lethality of the armed forces of even the smallest states. At the same time, the demand for resources by the industrial giants will enhance the economic and consequent political importance of a number of resource-rich nations. As a result, the international environment of the next several decades will be characterized by a diffusion of power, an emerging *de facto* polycentrism, a growth in nationalism, the consequent decline in the relevance of transnational ideologies, and concomitant developments which will defy explanation in terms of traditional systemic bipolar constructs.

ENDNOTES

1. *NATO and its Future: A German-American Roundtable* (Cambridge: Institute for Foreign Policy Analysis, 1978), p. 18.
2. See the CIA report on Soviet energy supply and consumption, released to the public in August 1977, *Prospects for Soviet Oil Production* (Washington, DC: Central Intelligence Agency) ER 77-10270, April 1977.
3. Recent breakthroughs in fusion energy technology have indicated that fusion energy may be an economically feasible alternative to traditional energy sources shortly after 2000. If additional breakthroughs are attained in the near term, this timetable could be accelerated. The impact of the availability of an inexhaustible and relatively inexpensive energy source on the international environment would be incalculable.
4. See Department of Economic and Social Affairs of the United Nations, *Demographic Yearbook 1975* (New York: United Nations, 1976), pp. 167-187; and Lester R. Brown, "Limits to Growth of Third World Cities," *Futurist*, December 1976, pp. 307-310.
5. Adequate daily individual caloric intake is 2700. John McHale, *World Facts and Trends* (New York: Collier, 1972), pt. 4.
6. *The New York Times*, June 8, 1978, p. 6.
7. Food and Agriculture Organization of the United Nations, *Production Yearbook 1975* (Rome: Food and Agriculture Organization, 1976), pp. 32, 41.
8. *The New York Times*, January 4, 1978, p. 10 and February 5, 1978, p. 75; and *The Washington Post*, June 6, 1978, p. 17.
9. This concept, known as "triage," has given rise to thoughts of "lifeboat ethics" in the United States. For an interesting brief treatment of both subjects, see Richard J. Barnet, "No Room in the Lifeboats," *The New York Times Magazine*, April 16, 1978, pp. 32-38.
10. See Hollis B. Chenery, "Restructuring the World Economy," *Foreign Affairs*, Vol. 53, No. 2, January 1975, pp. 258-263.
11. Such a possibility has long been apparent in aid debates in Congress in the United States. The United States nonetheless projects an increase in foreign economic and financial assistance which it extends from \$4.2 billion in 1977 to \$5.9 billion in 1980. See Office of Management and Budget, *The Budget of the United States Government Fiscal Year 1979* (Washington, DC: US Government Printing Office, 1978), p. 82.
12. For two articles discussing different aspects of technology transfers and interdependence, see J. Baranson, "Technology Exports Can Hurt Us," *Foreign Policy*, No. 25, Winter 1976-77, pp. 180-194; and T. Koizumi and K. J. Kopecky, "Economic Growth, Capital Movements and the International Transfer of Technical Knowledge," *Journal of International Economics*, February 1977, pp. 45-65.
13. For a discussion of appropriate technology, see R. A. Wakefield and P. Stafford, "Appropriate Technology: What It Is and Where It Is Going," *Futurist*, April 1977, pp. 72-76. See also R. S. Fortner, "Strategies for Self-Immolation: The Third World and the Transfer of Advanced Technologies," *Inter-American Economic Affairs*, Summer 1977, pp. 25-50.

14. See, Joseph I. Coffey, "Quo Vadimus?", *The Annals of the American Academy of Political and Social Science*, Vol. 430, March 1977, p. 12.
15. Frank C. Barnaby, "How States Can 'Go Nuclear,'" *The Annals*, Vol. 430, March 1977, p. 33.
16. *Ibid.*, p. 40.
17. Raymond Aron, "Richard Nixon and the Future of American Foreign Policy," *Daedalus* 101, Fall 1972, pp. 15-16.

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cont.

of resources; (2) increasing population pressures; (3) widening of the gap between have and have-not nations; (4) acceleration and proliferation of technological developments; (5) declining utility of great power strategic nuclear weapons; and, (6) expanding military capabilities.

As a result of these trends, there will be a continuing diffusion of power in the international system, a de facto polycentrism, a growth of nationalism, a decline in the relevance of ideology, and a concomitant development of political congruences and discontinuities which will defy interpretation in terms of previous bipolar or multipolar constructs.

In aggregate, the impacts of these trends suggest that we are entering an age when almost any state with a modicum of political, economic, or military strength can play power politics. It is within this context that policy alternatives must be sought which protect the interests and values of the United States and its allies.



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